



WHAT IS CLAIMED IS:

A method of manufacturing a wear resistant shoe, comprising:

cold-heading one end portion of a generally cylindrical blank to radially increase and axially diminish the dimensions of the one end portion, and to work harden the one end portion while leaving an opposite end portion dimensionally unchanged; and

subsequently cold-working and thereby hardening the opposite end portion.

- The method of claim 1, including the additional steps of:
 machining the cold-headed blank prior to cold-working to form a
 hollow skirt in said opposite end portion for receiving a rounded end of a
 piston rod.
- 3. The method of claim 2, wherein the step of cold-working comprises crimping the skirt about a received piston rounded end, joining the shoe and piston, and work hardening the skirt.
- 4. The method of claim 3, further including the step of machining the one end portion to predetermined final dimensions subsequent to the step of cold-heading and prior to the step of crimping.
- 5. The method of claim 3, further including the step of machining the cold-headed end portion to form a cam engaging wear resistant surface.
- 6. The method of claim 5, further including the step of surface hardening the machined cam engaging surface.
 - 7. The method of claim 6, wherein the step of surface hardening comprises application of a TiN material.
 - 8. A wear resistant shoe manufactured according to the process of claim 1.
- 9. The method of claim 1, wherein the cylindrical blank comprises an alloy of cobalt

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10. A method of manufacturing a wear resistant shoe, comprising: work hardening a portion of a cylindrical member to a substantial

depth;

machining the cylindrical member portion to finished dimensions;

5 **and**

surface hardening a face of the machined cylindrical member

partion.

- 11. The method of claim 10, including the additional step of machining another portion of the cylindrical member to form a hollow skirt in said another portion for receiving a rounded end of a piston rod.
- 12. The method of claim 11, including the further step of crimping the hollow skirt about the rounded end, the crimping imparting an increased hardness to the cylindrical member close to the crimp.
- 13. A wear resistant shoe having a surface hardened face for engaging a cam, a socket for providing a pivotal coupling to a piston rod, and a work hardened foundation in the face region for providing rigid support for the surface hardened face.
- 14. The shoe of claim 13, wherein the socket is crimped around a rounded portion of a piston and work hardened by the crimping.

15. A method of forming and assembling a piston and wear resistant shoe, the shoe formed from rod stock of a diameter less than the greatest diameter of the finished shoe, comprising:

upsetting one end portion of the rod stock to axially reduce and radially increase the dimensions of the one end portion:

forming a hollow region in an opposite rod stock end portion; and crimping the periphery of the hollow region about a rounded end of the piston rod.

- 16. The method of claim 15 further comprising the step of work hardening the one end portion during the upsetting step.
- 17. The method of claim 16 further comprising the step of surface hardening the upset one end.

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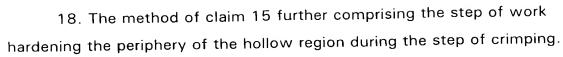
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19. A method of forming and assembling a piston and wear resistant shoe, the shoe formed from hardened rod stock, comprising:

forming a hollow region in one rod stock end portion; annealing the one end portion of the rod stock; and crimping the periohery of the hollow region about a rounded end of the piston rod.

20. The method of claim 19, including the additional step of machining an opposite end portion of the rod stock to form a cam 10 engaging wear resistant surface.

21. The method of claim 20 further including the step of surface bardening the machined cam ongaging surface.

22. The method of claim 19, wherein the step of crimping work hardens the one end portion. 15